CLAIMS:

1. An n-channel or ambipolar field-effect transistor including an organic semiconductive layer having an electron affinity $EA_{semicond}$; and an organic gate dielectric layer forming an interface with the semiconductive layer; characterised in that the bulk concentration of trapping groups in the gate dielectric layer is less than $10^{18}cm^{-3}$, where a trapping group is a group having (i) an electron affinity EA_x greater than or equal to $EA_{semicond}$ and/or (ii) a reactive electron affinity EA_{rxn} greater than or equal to $(EA_{semicond.}-2eV)$.

2. A transistor according to claim 1, wherein the transistor is an ambipolar field-effect transistor.

3. A transistor according to any one of the preceding claims wherein $EA_{semicond.}$ is greater than or equal to 2eV.

4. A transistor according to claim 3 wherein $EA_{semicond.}$ is in the range of from 2eV to 4eV.

5. A transistor according to any one of the preceding claims wherein the gate dielectric layer comprises an organic insulating material and the organic insulating material does not contain a repeat unit or residue unit comprising a trapping group.

6. A transistor according to any one of the preceding claims, wherein the insulating material does not contain a repeat unit or residue unit comprising a group having (i) an

electron affinity EA_x greater than or equal to 3eV and/or (ii) a reactive electron affinity EA_{rxn} greater than or equal to 0.5eV.

7. A transistor according to claim 6 wherein the insulating material does not contain a repeat unit or residue unit comprising a quinone, aromatic -OH, aliphatic -COOH, aromatic -SH, or aromatic -COOH group.

8. A transistor according to any one of the preceding claims, wherein the insulating material contains one or more groups selected from alkene, alkylene, cycloalkene, cycloalkylene, siloxane, ether oxygen, alkyl, cycloalkyl, phenyl, and phenylene groups.

9. A transistor according to any one of claims 5 to 8 wherein the insulating material comprises an insulating polymer.

10. A transistor according to claim 9, wherein the insulating polymer is selected from the group consisting of substituted and unsubstituted poly(siloxanes) and copolymers thereof; substituted and unsubstituted poly(alkenes) and copolymers thereof; substituted and unsubstituted poly(styrenes) and copolymers thereof; and substituted and unsubstituted poly(oxyalkylenes) and copolymers thereof.

11. A transistor according to claim 10, wherein the backbone of the insulating polymer comprises a repeat unit comprising $-Si(R)_2-O-Si(R)_2-$ where each R independently is methyl or substituted or unsubstituted phenyl.

12. A transistor according to any one of claims 9 to 11, wherein the insulating polymer is crosslinked.

13. A transistor according to any one of the preceding claims wherein the organic semiconductive layer comprises a semiconductive polymer.

14. A transistor according to any one of claims 1 to 12 wherein the organic semiconductive layer comprises a semiconductive oligomer.

15. A transistor according to any one of claims 1 to 12 wherein the organic semiconductive layer comprises a semiconductive small molecule.

16. A method for making a transistor as defined any one of claims 1 to 15.

17. Use of a transistor according to any one of claims 1 to 15 for n-channel conduction in an n-channel or ambipolar field effect transistor.

18. Use of an organic gate insulating material that does not contain any chemical groups having (i)EA_X greater than or equal to 3eV and/or (ii)EA_{rxn} greater than or equal to 0.5eV, for n-channel conduction.

19. Use according to claim 18, wherein the insulating material does not contain any chemical groups having (i)EA_X greater than or equal to 2eV and/or (EA_{rxn}) greater than or equal to 0eV.

20. A circuit, complementary circuit, or logic circuit including a transistor as defined in any one of claims 1 to 15.

21. A method for making a circuit, complementary circuit, or logic circuit as defined in claim 20.